

## Message Text

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ORIGIN NRC-07

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FM SECSTATE WASHDC

TO AMEMBASSY BUENOS AIRES PRIORITY

AMCONSUL RIO DE JANEIRO

AMEMBASSY OTTAWA

AMEMBASSY TAIPEI

AMEMBASSY COPENHAGEN

AMEMBASSY LONDON

AMEMBASSY HELSINKI

AMEMBASSY PARIS

AMEMBASSY BONN

AMEMBASSY NEW DELHI

AMEMBASSY BRASILIA

AMEMBASSY TEHRAN

AMEMBASSY TEL AVIV

AMEMBASSY ROME

AMEMBASSY ABIDJAN

AMEMBASSY TOKYO

AMEMBASSY MEXICO

AMEMBASSY WARSAW

AMEMBASSY BUCHAREST

AMEMBASSY MOSCOW

AMEMBASSY MADRID

AMEMBASSY STOCKHOLM

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AMEMBASSY BERN

AMEMBASSY BELGRADE

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USMISSION EC BRUSSELS

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IT, IV, JA, MX, PL, RO, UR, SP, SW, SZ, YO, BE, AU

SUBJECT: NRC ISSUES FINAL REPORT OF REACTOR SAFETY STUDY  
REF: STATE A-2467  
FOR: SCIATT

1. MISSIONS ARE REQUESTED TO PASS THE FOLLOWING INFORMATION TO NUCLEAR REGULATORY COMMISSION TECHNICAL NOTIFICATION ADDRESSEES PER REF A-2467. FOR BRASILIA AND TAIPEI PER REFTEL STATE 180431. FOR LONDON NOTE ADDRESSEE CHANGED FROM RUTHERFORD TO J.J. CAMPBELL AT SAME ADDRESS. FOR DENMARK TECHNICAL ADDRESSEE IS MR. HANS VON BUELOW, DANISH ATOMIC ENERGY COMMISSION, 29, STRANDGADE, DK-1401, COPENHAGEN K, DENMARK. COUNTRIES WHICH HAVE REGULATORY AGENCIES THAT HAVE CONCLUDED INFORMATION EXCHANGE ARRANGEMENTS WITH NRC, (DENMARK, FRANCE, FRG, ITALY, JAPAN, SPAIN, SWEDEN, SWITZERLAND AND U.K.) WILL RECEIVE BY DIRECT MAIL ADVANCE COPIES OF THE EXECUTIVE SUMMARY AND COMPLETE REPORT. FOR OTHERS, SEE PARAGRAPH 9.

2. THE FINAL REPORT OF A THREE-YEAR STUDY TO ESTIMATE RISKS TO THE PUBLIC FROM POTENTIAL ACCIDENTS IN TODAY'S LARGE NUCLEAR POWER PLANTS HAS BEEN COMPLETED. THE REPORT IS THE CULMINATION OF MOST COMPREHENSIVE RISK ASSESSMENT OF NUCLEAR

POWER PLANTS MADE TO DATE. OBJECTIVE OF THE STUDY WAS TO MAKE A REALISTIC ASSESSMENT OF POTENTIAL RISKS ASSOCIATED WITH PRESENT-DAY LIGHT WATER NUCLEAR POWER PLANTS AND TO PROVIDE PERSPECTIVE BY COMPARING THEM WITH NON-NUCLEAR RISKS TO WHICH SOCIETY IS EXPOSED. THE STUDY WAS DIRECTED BY PROFESSOR NORMAN RASMUSSEN OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY AND INVOLVED A TEAM OF 60 PERSONS FORMED BY MR. SAUL LEVINE, DEPUTY DIRECTOR OF THE NUCLEAR

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REGULATORY COMMISSION'S OFFICE OF NUCLEAR REGULATORY RESEARCH.

3. OVERALL CONCLUSION OF THE REPORT IS THAT RISKS ATTACHED TO THE OPERATION OF PRESENT-DAY NUCLEAR POWER PLANTS ARE VERY LOW COMPARED TO OTHER NATURAL AND MAN-MADE RISKS. STUDY ALSO CONCLUDES:  
(A) --NUCLEAR POWER PLANTS ARE ABOUT 10,000 TIMES LESS

LIKELY TO PRODUCE FATAL ACCIDENTS  
THAN MANY NON-NUCLEAR  
ACTIVITIES. THIS COMPARISON IS BASED ON THE STUDY OF  
BOTH NUCLEAR POWER PLANTS AND NON-NUCLEAR EVENTS SUCH AS  
FIRES, EXPLOSIONS, TOXIC CHEMICAL RELEASES, DAM FAILURES,

IRPLANE CRASHES, EARTHQUAKES, HURRICANES AND TORNADOES.  
(B) --NON2NUCLEAR ACCIDENTS INVOLVING COMPARABLE LARGE  
DOLLAR-VALUE DAMAGE ARE ABOUT 1000 TIMES MORE LIKELY THAN  
NUCLEAR POWER PLANT ACCIDENTS.

(C) --THE CHANCE THAT A PERSON LIVING IN THE GENERAL VI-  
CINITY OF A NUCLEAR POWER PLANT WILL BE FATALLY INJURED  
IN A REACTOR ACCIDENT IS ONE IN FIVE BILLION PER YEAR, AS  
COMPARED WITH ONE IN 4000 FOR A MOTOR VEHICLE ACCIDENT AND  
ONE IN 10,000 FOR A FALL. THE CHANCE THAT A PERSON WILL  
BE INJURED IN A REACTOR ACCIDENT IS ONE CHANCE IN 75  
MILLION PER YEAR.

(D) --AS AN EXAMPLE, IN THE EVENT OF AN UNLIKELY REACTOR  
ACCIDENT WITH A PROBABILITY OF ONE IN A MILLION PER RE-  
ACTOR PER YEAR, LATENT HEALTH EFFECTS EXCEPT FOR THYROID  
NODULES WOULD BE SUCH A SMALL PERCENTAGE OF THE NORMAL  
INCIDENCE RATES THAT THEY WOULD BE DIFFICULT TO DETECT.  
THYROID NODULES WOULD REPRESENT ABOUT 15 OF THE NORMAL  
INCIDENCE RATE, SO THAT THE INCREASE WOULD BE DETECTABLE.  
THESE NODULES CAN BE READILY DIAGNOSED AND SUCCESSFULLY  
TREATED.

4. WITH RESPECT TO ACCIDENT PROBABILITIES, THE FINAL  
REPORT DIFFERS ONLY IN MINOR RESPECTS FROM THE DRAFT  
REPORT ISSUED FOR PUBLIC COMMENT IN AUGUST 1974. THE  
SECTIONS ON CONSEQUENCES HAVE BEEN SUBSTANTIALLY REVISED  
AS A RESULT OF ADVICE FROM EMINENT SCIENTISTS IN ALL RE-  
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LEVANT DISCIPLINES. CALCULATIONAL IMPROVEMENTS RESULTED,  
IN MOST CASES, IN INCREASING THE CONSEQUENCES OVER THE

LEVELS INDICATED IN THE DRAFT REPORT; HOWEVER, THE LEVEL  
OF RISK STILL REMAINS VERY LOW RELATIVE TO EXISTING NON-  
NUCLEAR RISKS.

5. NRC CHAIRMAN WILLIAM A. ANDERS SAID OF THE FINAL  
REPORT: "THE COMMISSION BELIEVES THAT THE REACTOR SAFETY  
STUDY REPORT PROVIDES AN OBJECTIVE AND MEANINGFUL ESTIMATE  
OF THE PUBLIC RISKS ASSOCIATED WITH THE OPERATION OF  
PRESENT-DAY LIGHT WATER POWER REACTORS IN THE UNITED  
STATES. THE FINAL REPORT IS A SOUNDLY BASED AND IMPRES-  
SIVE WORK. ITS OVERALL CONCLUSION IS THAT THE RISK AT-  
TACHED TO THE OPERATION OF NUCLEAR POWER PLANTS IS VERY

LOW COMPARED WITH OTHER NATURAL AND MAN-MADE RISKS. THE REPORT REINFORCES THE COMMISSION'S BELIEF THAT A NUCLEAR POWER PLANT DESIGNED, CONSTRUCTED AND OPERATED IN ACCORDANCE WITH NRC'S COMPREHENSIVE REGULATORY REQUIREMENTS PROVIDES ADEQUATE PROTECTION TO PUBLIC HEALTH AND SAFETY AND THE ENVIRONMENT. OF COURSE, SUCH REGULATORY REQUIREMENTS MUST BE CONTINUALLY REVIEWED IN THE LIGHT OF NEW KNOWLEDGE, INCLUDING THAT DERIVED FROM A VIGOROUS REGULATORY RESEARCH PROGRAM."

6. THE NUCLEAR RISKS COULD ONLY BE ESTIMATED IN THE STUDY SINCE THERE HAVE BEEN NO NUCLEAR POWER ACCIDENTS TO DATE WHICH HAVE RESULTED IN SIGNIFICANT RELEASES OF RADIOACTIVITY TO THE ENVIRONMENT. MANY OF THE METHODS USED IN THE STUDY, INCLUDING "EVENT TREES" AND "FAULT TREES," WERE DEVELOPED BY THE DEPARTMENT OF DEFENSE AND THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION IN THE LAST 10 YEARS. THE APPLICATION OF THESE METHODS IN THE REACTOR SAFETY STUDY REPRESENTS A SIGNIFICANT STEP FORWARD IN RISK ASSESSMENT CAPABILITY.

7. THE ONLY WAY THAT POTENTIALLY LARGE AMOUNTS OF RADIOACTIVITY CAN BE RELEASED FROM A NUCLEAR POWER PLANT IS BY MELTING THE FUEL IN THE REACTOR CORE. THE SAFETY DESIGN OF REACTORS INCLUDES A SERIES OF SYSTEMS TO PREVENT THE OVERHEATING OF FUEL AND TO CONTROL POTENTIAL RELEASES OF UNCLASSIFIED

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RADIOACTIVITY. THUS, FOR AN ACCIDENTAL RELEASE OF RADIOACTIVITY TO THE ENVIRONMENT TO OCCUR, THERE WOULD HAVE TO BE A SERIES OF SEQUENTIAL FAILURES THAT WOULD CAUSE THE FUEL TO OVERHEAT AND RELEASE ITS RADIOACTIVITY. THERE ALSO WOULD HAVE TO BE FAILURES IN THE SYSTEMS DESIGNED TO REMOVE AND CONTAIN RADIOACTIVITY. THE STUDY SHOWS THAT FUEL MELTING HAS A LOW PROBABILITY OF RESULTING IN AN ACCIDENT HAVING LARGE PUBLIC CONSEQUENCES.

8. MORE THAN 1800 PAGES OF COMMENTS ON THE 1974 DRAFT REPORT WERE RECEIVED FROM 87 INDIVIDUALS AND ORGANIZATIONS.

THESE COMMENTS CAME FROM A BROAD SPECTRUM OF SOCIETY, REPRESENTING MANY DIVERSE VIEWPOINTS AND FIELDS OF EXPERTISE, AND INCLUDING THE COMMISSION'S STAFF. ALL WERE CAREFULLY CONSIDERED BY THE STUDY GROUP IN PREPARING THE FINAL REPORT. THE STUDY WAS ORIGINALLY SPONSORED BY THE ATOMIC ENERGY COMMISSION AND WAS COMPLETED UNDER THE SPONSORSHIP OF THE NEW NUCLEAR REGULATORY COMMISSION WITH RENEWED EMPHASIS ON THE INDEPENDENT NATURE OF THE WORK.

9. COPIES OF THE REACTOR SAFETY STUDY WILL BE AVAILABLE

FOR PURCHASE ABOUT DECEMBER 1 FROM THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22161. SINGLE COPIES OF THE EXECUTIVE SUMMARY OF THE REPORT MAYHBE OBTAINED BY WRITING TO MR. SAUL LEVINE, STAFF DIRECTOR, REACTOR SAFETY STUDY, NUCLEAR REGULATORY COMMISSION, WASHINGTON, D.C. 20555. KISSINGER

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